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BY THE COMPTROLLER GENERAL

ORIGINAL

Report To The Congress

OF THE UNITED STATES

COMPLETED

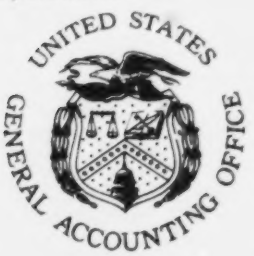
An Assessment Of 1980 Census Results In 10 Urban Areas

Congressional representation and the distribution of billions of Federal dollars will be influenced by 1980 Decennial Census results.

GAO's review focused on detecting any improprieties in taking the census. Its tests of the major processes showed that

- --population counts on most mail returned questionnaires were accepted as received,
- --most population counts directly obtained by census employees appeared in line with counts reported by households,
- --programs for identifying persons missed were sometimes not effective,
- --local officials were generally satisfied with their new chance to review census counts; the effectiveness of local reviews in producing more accurate counts is uncertain because results were not documented, and
- --questionnaires were accurately tabulated.

The problems GAO found did not indicate any intentional overcounting. If anything, they could lead to undercounting in urban areas. GAO's findings do not necessarily represent the national situation. According to the Census Bureau, GAO was effective in analyzing its operations.



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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

This report provides the Congress with an independent assessment of the 1980 census. The review was done at the request of the House Minority Leader and other members of the Congress.

GAO monitored census operations in 10 urban areas to detect any widespread, improper altering or recording of population counts. Our examination focused on the major processes for taking the census--data collection, processing, and tabulation--as they were being carried out.

GAO did not find any intentional inflating of population counts, but it did find problems that could have led to undercounting some population in large metropolitan areas.

Copies of this report are being sent to the Director, Office of Management and Budget; the Secretary of Commerce; and the Director, Bureau of the Census.

Comptroller General
of the United States

COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

ASSESSMENT OF 1980 CENSUS RESULTS IN 10 URBAN AREAS

D I G E S T

GAO monitored 1980 census operations to detect any widespread, improper altering or recording of population counts. The review showed that:

--Population counts on most questionnaires returned in the mail were accepted as received with no evidence of improper adjustments.

--Most population counts directly obtained by census employees appeared in line with counts reported by similar households.

--Programs for identifying persons not counted were sometimes not effective because of poor management and a lack of public cooperation.

--Local officials were generally satisfied with their new opportunity to review census counts.

--The effectiveness of local reviews in producing more accurate counts is uncertain because results were not documented.

--Questionnaires were accurately tabulated.

The problems GAO found with the census did not indicate any intentional inflating of population counts. If anything, the problems detected could lead to undercounting in large metropolitan areas. GAO's scope of work precluded passing judgement on the magnitude of the potential undercount.

GAO's assessment focused on the main processes of census taking--data collection, processing and tabulation. It tested the census at 40 of 409 temporary district offices set up to count the population, the three processing centers that machine read

the questionnaires, and Census Bureau headquarters which tabulated the final results. The 40 offices were located in 10 urban areas. Although the assessment was far-reaching, its findings and conclusions are limited to the census results examined. (See pp. 5 and 48.)

74 PERCENT OF HOUSEHOLDS COUNTED THEMSELVES

The Census Bureau asked the Nation's households to count themselves. Most were sent questionnaires to return in the mail. Nationally, about 74 percent of the questionnaires sent out were returned. GAO reviewed 12,000 mail-returned questionnaires to see if population counts were recorded as returned by the respondents: For 97 percent of the questionnaires, they were. The sample was taken as the returns were opened and the population count compared to the count as it left the district office. (See p. 9.)

Of the questionnaires that were changed, GAO verified that 56 percent were revised because the respondents provided incomplete or inconsistent information. The other 44 percent could also have been changed for these reasons but to verify this would have required contact with the households--GAO did not have the resources to make such a check. (See p. 10.)

GAO also examined a sample of 4,000 mail returns assigned for followup. Followup provided another opportunity, if there was any intent, to improperly alter population counts. GAO reviewed the questionnaires requiring followup to see if population counts were changed. About 93 percent of the followup returns showed no changes to the population counts, about 5 percent were changed because of incomplete or inconsistent respondent data, and about 2 percent for unexplained reasons. (See p. 12.)

GAO found no instances of employees improperly altering population counts in either sample.

CENSUS EMPLOYEES COUNT 26 PERCENT

About 26 percent of the housing units to which questionnaires were sent failed to respond.

For these, GAO wanted to know how accurate the population counts obtained by employees were.

Since employee counts came from the same area in which some households had also counted themselves, GAO compared the average household size reported by enumerators for a sample of 400 enumeration districts to that reported by households. Enumeration districts were the block group units used in the collection and tabulation of census results by the Census Bureau. GAO assumed that because an enumeration district was usually small (270 housing units) and therefore presumably generally homogeneous, the average household size reported by enumerators and households should be about the same. GAO used a generally accepted statistical test to determine if any significant difference existed.

There was no significant difference in 37 of 40 district offices reviewed and in 6 of 8 urban areas where more than one office was reviewed. In the others, enumerators reported average household sizes significantly less than the average size reported by households. The enumerators' counts may have been too low. Further testing would, however, be needed to explain the inconsistencies. (See p. 14.)

PROBLEM QUESTIONNAIRES NOT ALWAYS RESOLVED

Some questionnaires were accepted with less than complete information about the respondents. Although the Census Bureau allowed

Tear Sheet

this under certain conditions, GAO found 1,600 of 81,000 questionnaires reviewed where the practice was used inappropriately to reduce workloads. (See p. 16.)

Also the Census Bureau frequently did not followup on information indicating that entire households might have been missed. Unresolved housing unit discrepancies were found in 244 of 400 enumeration districts reviewed. At stake were about 4,400 households which may not have been counted. Failure to resolve such discrepancies could lead to undercounts in some urban areas. (See p. 29.)

PROGRAMS FOR COUNTING HARD TO FIND PERSONS

Population counts for group quarters (hospitals, hotels, etc.), and other special places (bus depots, railway stations, etc.) were within the Census Bureau's quality control estimates. (See p. 21.)

Comparing names on census questionnaires to other listings of names, such as driver's license records, identified a few persons not previously counted at households. (See p. 28.)

Respondents frequently did not cooperate in answering questions designed to detect potentially missed persons. This was the case on 4,203 of 16,000 questionnaires GAO examined. As many as 210 households may have been miscounted because the Census Bureau did not follow up on the households which did not cooperate. (See p. 33.)

LOCAL OFFICIALS REVIEW HOUSING COUNTS

To reduce undercounting caused by missed housing, the Census Bureau under its Local Review Program invited 39,500 communities to review and comment on the preliminary housing counts for their areas. The Census

Bureau hoped to identify errors through these checks and ultimately count persons missed earlier. Only 12,392 communities responded to the Census Bureau's request; 5,829 said they had no problems with the housing counts and 6,563 believed their counts were inaccurate. The Census Bureau rejected almost two-thirds of the latter because they did not meet established documentation criteria. (See p. 35.)

GAO reviewed the results of the Local Review Program in 29 district offices. The offices' records for the program were usually incomplete, not in the form required, missing, or had been mixed in with records from other office operations. (See p. 36.)

Where records were available, they showed that for 267 communities, 148 responses were accepted for review, 24 responses rejected for not meeting documentation criteria, and 95 communities did not respond. (See p. 36.)

The 148 communities challenged the housing counts of 2,459 enumeration districts. Of these 1,934 were resolved, according to the Census Bureau. The other 525 were not resolved because (1) the district office had spent its funding for the program, (2) the community's response was received too late, or (3) community estimates were lower than preliminary counts. (See p. 37.)

The 148 communities also challenged group quarters counts for 230 enumeration districts of which 100 went unresolved for the same reasons as cited above. (See p. 41.)

GAO contacted a number of responding communities. The communities expressed a lot of interest in the program, a generally positive opinion of the way it was conducted, but some dissatisfaction. (See p. 43.)

TABULATING CENSUS RESULTS

Population counts for each enumeration district were manually tabulated by district offices. These counts were used for quality control to cross check the final counts obtained by machine reading the questionnaires. (See p. 45.)

GAO's sample of 400 enumeration districts, of which 281 were processed when GAO's field work was finished, showed population counts were accurately tabulated. (See p. 46.)

AGENCY COMMENTS

According to the Census Bureau this review was a key example of excellent cooperation between the two agencies. The Bureau acknowledged that GAO was effective in analyzing district office operations. The Bureau said it will probably incorporate techniques used by GAO into future censuses to monitor district office operations. The Bureau's comments can be found in appendix IV.

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CHAPTER 1

INTRODUCTION

The 1980 census marked the 20th time in the Nation's history that Americans have counted themselves. In response to a request from the House Minority Leader and nine members of Congress (see app. I), we monitored the progress of the 1980 census to detect any widespread inappropriate altering or recording of population information.

The request stemmed from congressional concern over

--The use of political patronage by the executive branch to hire temporary census workers.

--The effect of allowing local government officials to review and comment on census population counts.

--The effect of miscounts on the apportionment of congressional seats and the disbursement of billions of dollars in Federal funds.

IMPORTANCE OF A COMPLETE CENSUS

Census data is important to apportionment and districting in the Congress and in State governments. Article 1, section II, of the U.S. Constitution established the census and required that censuses be conducted at 10-year intervals. The first census was taken in 1790. The census was authorized to determine the number of representatives each State could have in the Congress. By law, 13 U.S.C. 141, the decennial census date is April 1; the tabulation of total population by States for apportioning congressional representatives must be provided to the President within 9 months; and within 1 year of Census Day, the Bureau of the Census, Department of Commerce, must present to the State legislatures population totals for all counties, cities, and certain recognized political and statistical subdivisions for potential redistricting of the legislatures.

Government planning, government sharing

The use of census statistics in government programs has grown enormously. Census data is important to State and local governments since billions in funds, including revenue sharing and grants for public works, job training, and education, are distributed annually using the data. Census data is further used as a benchmark for subsequent collection of many kinds of data and is the best source of small area data.

Today, in addition to the Federal revenue-sharing program, at least 25 other Federal programs require the use of population estimates based on the decennial census. More than 90 additional programs, while not specifically mentioning the census, require data that comes from or depends on the decennial census. Overall, studies indicate that the annual disbursement of some $83 billion of Federal funds will be affected by the outcome of the 1980 census.

GATHERING 1980 CENSUS INFORMATION

When the census got underway, the challenge was to gather an estimated 3 billion items of information from more than 222 million people in about 87 million housing units. To meet this challenge, the Census Bureau established complex procedures for identifying and counting individuals. These procedures were carried out at 409 district offices throughout the country and 3 data processing offices in Louisiana, Indiana, and California. The Bureau estimates that taking the 1980 census will cost about $1 billion and during the peak period about 275,000 temporary employees were working it. The Bureau believes that its efforts have resulted in the best census ever. The final housing count will be close to 88 million units and the number of people counted close to 226 million, according to Bureau estimates.

To save time and enhance the convenience of answering the census, the mail was used extensively. The system worked this way: In most areas of the United States, census questionnaires were mailed on or about March 28, 1980, to housing units. Households were to complete the questionnaires and mail them back to designated census offices on Census Day. In mail areas (which covered 90 to 95 percent of the population) the Postal Service delivered the returned questionnaires to the appropriate census district offices, where they were checked in and reviewed for missing or incomplete entries. Incomplete questionnaires were to be completed by phone from the district offices when possible. Census enumerators visited and enumerated housing units which did not return questionnaires and those whose questionnaires failed the office reviews and could not be completed by phone.

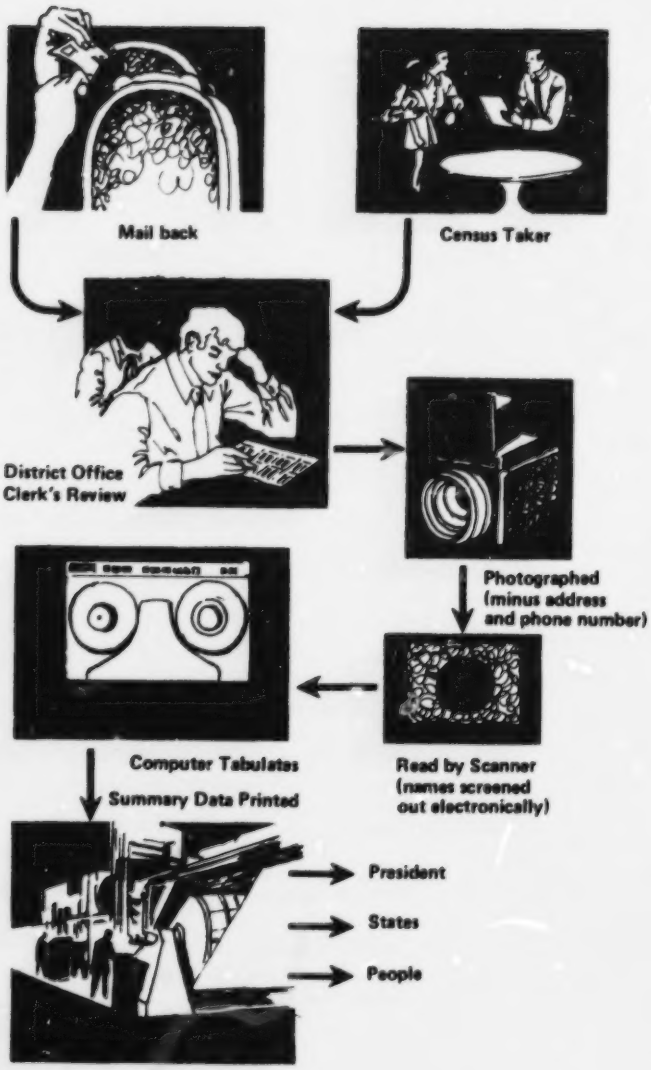
The conventional method which closely resembled the traditional house-to-house canvass was used in very rural areas. Questionnaires were mailed to residential addresses in conventional census areas. Households were asked to complete the forms and hold them for pickup by enumerators. Enumerators were to systematically canvass and list all addresses in their assigned areas. At the same time, enumerators were to stop at all housing units and collect questionnaires left by the Postal Service. If a unit had not completed the

questionnaire or did not receive one in the mail, the enumerator was to conduct an interview to get the census information.

The Bureau also conducted special place operations to count persons not residing in private households. These special place operations included procedures to enumerate persons residing in group quarters. Persons in transit (T-night), persons who had no regular residence (M-night), and highly transient persons who for various reasons may not have been reported at any place of residence (casual count) were also counted during special operations. The Bureau expected to count from 6 million to 10 million persons, or about 3 to 5 percent of the population in special places.

The Bureau, in an effort to obtain a complete and accurate population and housing count, developed coverage improvement operations. These included obtaining lists of names and addresses of persons having the characteristics of people often missed in the census. In addition, preliminary population and housing counts were sent to communities for review and comment. The Bureau also included three questions on the questionnaire to remind respondents about any persons not listed or who were listed in error. If respondents answered "yes" to any of the questions the Bureau determined who should have been counted and listed them on the questionnaires. The Bureau also asked respondents to mark the number of living quarters occupied and vacant in the structure where they resided and their addresses. This question was asked in order to identify missed living quarters. A fifth question asked respondents to list the names of all persons living in the household on Census Day, and/or those who were staying or visiting and had no other homes. By comparing the answers to this question with the number of persons for whom information was recorded inside the questionnaire, the Bureau hoped to identify persons who might otherwise be omitted.

What happened to the millions of questionnaires after people answered and returned them? Step by step, here are the highlights of the processing procedure. As the chart shows, after a review for completeness at 1 of the 409 district offices, the questionnaires were shipped to one of three processing centers. At the center, a microfilm was made of the questionnaire with a special camera. The microfilm then went to an optical scanner which read the answers and transmitted the information electronically to the Bureau's computers in Suitland, Maryland. The Bureau computers added up the raw statistics State by State.



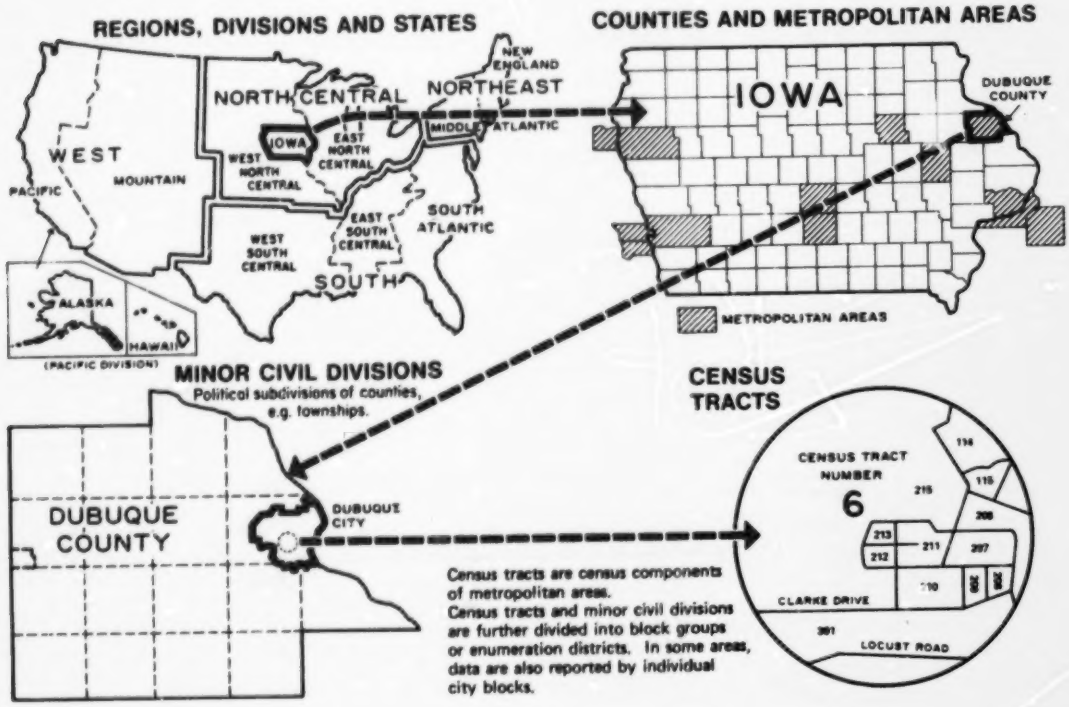
Source: Bureau of the Census

CENSUS GEOGRAPHY

The results of the census will be published for thousands of geographic areas. The data will be tabulated for the U.S. total; the 50 States; the District of Columbia; and outlying areas such as Puerto Rico. There will also be data for 3,137 counties and 285 metropolitan areas. (See fig. 1, upper right corner.)

Metropolitan areas were subdivided into census tracts (fig. 1 lower corner). The tracts and minor civil divisions were further divided into block groups called enumeration districts. An enumeration district was the area covered by one enumerator. It contained an average of 699 persons (about 270 housing units). This unit was used as the unit of analysis for our work at district offices.

FIGURE 1. CENSUS GEOGRAPHY



Source: Population Reference Bureau, Inc.

OBJECTIVE, SCOPE, AND METHODOLOGY

Our objective was to detect any widespread inappropriate altering or recording of the 1980 population counts. Our approach focused on the major operations of the district offices, data processing centers, and Census Bureau's headquarters.

At the district office level, we selected 40 of the 409 offices to determine the

--extent and propriety of changes made to population counts on questionnaires returned in the mail,

--reasonableness of the population counts for questionnaires obtained by enumerators when respondents did not return questionnaires in the mail,

--reasonableness of population counts obtained through coverage improvement programs, and

--clerical accuracy and reliability of records used to produce district office population and housing counts.

In addition, at 29 of the 40 offices, we analyzed the responses to local community challenges to preliminary population and housing counts and obtained the local officials' opinion of Census Bureau's response.

We visited the three data processing offices to observe the processing of questionnaires. Using a sample of district-office-tabulated population counts reported to Bureau headquarters, we tested the reasonableness of the final population counts arrived at by an automated reading of population counts from the questionnaires.

Our analyses should be used with three important cautions: First, our analyses do not reflect on the overall completeness or accuracy of the 1980 census in the 40 district offices reviewed; we therefore caution readers not to project our findings to the universe of all district offices and all questionnaires. Secondly, we did not verify the accuracy of population information on questionnaires with respondents; therefore no inferences can be positively drawn as to the appropriateness of changes made to population information supplied on questionnaires returned by mail. Thirdly, although our examination revealed a number of census procedures needing improvement, these should not be considered typical of how procedures were implemented by district offices not reviewed. For many of the activities related to processing mail returned questionnaires, we found no significant weaknesses.

(Additional information on the objective, scope, and methodology of our review is included in ch. 6.)

PRIOR AUDITS OF THE CENSUS

Our Office and the Department of Commerce's Office of Inspector General have issued several reports on various aspects of the 1980 census process. Our reports on the 1980

census include "Programs To Reduce the Decennial Census Undercount (GGD-76-72, May 5, 1976); "Problems in Developing the 1980 Census Mail List" (GGD-80-50, Mar. 31, 1980); and "Problems in Test Censuses Cause Concern for 1980 Census" (GGD-80-62, June 3, 1980). We also issued letter reports on census pretests and planning, budgeting, and accounting for the 1980 census (GGD-78-72, Oct. 11. 1977) and (GGD-79-7, Nov. 9, 1978).

Office of Inspector General reports on the 1980 census covered such areas as security provided over confidential census information, preparatory work for the 1980 census, and space management and leasing agreements.

CHAPTER 2

POPULATION COUNTS ON MOST QUESTIONNAIRES EXAMINED APPEAR REASONABLE

The success of the 1980 census depended on the willingness of large numbers of individuals to provide by mail accurate and complete information on their households. The Census Bureau's goal was to collect 80 percent of the population and housing information through mail returns. When a questionnaire was not returned for housing units, enumerators visited the nonresponding units to count the persons living there.

Overall, there was a 75-percent mail return rate for the 40 district offices reviewed, although some return rates were in the fifties, adding to the burden of census taking. The national return rate was 74 percent. The population count on mail returned questionnaires nearly always was counted as received. At 37 district offices no significant differences were found between the average household size reported by respondents returning questionnaires and that obtained by enumerators in their followup efforts. Some gaps in population counts were noted, but the effect could not be readily assessed from census records. The gaps have the potential to affect the accuracy of information regarding age, sex, and race of a city's population.

MAIL RETURN RATES HIGH

After Census Day (April 1, 1980), the Census Bureau faced the task of obtaining questionnaires for every identified address. The Bureau expected that at least 80 percent of the housing units sent questionnaires would return them by mail. At the 40 district offices reviewed, about 7.2 million questionnaires were mailed to housing units. Overall, 5.4 million households (75 percent) responded with completed questionnaires. An additional 1.8 million units were enumerated during followup operations. The 40 district offices were in 10 urban areas. There were also other district offices responsible for counting the population in these areas which we did not review. The following table shows the mail-out/mail-back rate experienced during the 1980 census at the district offices reviewed.

Urban area	Number of district offices reviewed	Number of questionnaires Mailed out	Mailed back	Percent
		(000's omitted)		
Chicago, IL	6	846	581	69
Cleveland, OH	3	612	565	92
Detroit, MI	4	750	548	73
Los Angeles County, CA	8	1,720	1,331	77
New York, NY	7	1,035	593	57
Newark, NJ	1	109	64	59
Philadelphia, PA	3	452	289	64
Pittsburgh, PA	2	351	301	86
San Francisco Bay area, CA	5	1,217	1,021	84
West New York, NJ a/	1	162	119	74
Total	40	7,254	5,412	75

a/Although the district office reviewed was in the town of West New York, its area included 10 communities in Hudson County and 9 communities in Bergen County, New Jersey.

The 75-percent overall mail return rate experienced in the 40 district offices reviewed is in line with the 74 percent national mail return rate experienced by the Bureau. In reporting on its mail return rate, the Bureau has preferred to quote a 87-percent national mail return rate. This is an overstatement because the 87-percent figure reflects the mail returns for only occupied housing. Followup activities would still be necessary for the vacant housing units. As the table above shows, 6 of the 10 urban areas reviewed experienced mail return rates which approximated or exceeded the national mail return rate.

FEW POPULATION COUNTS CHANGED ON MAIL-RETURNED QUESTIONNAIRES

There was congressional concern that district office employees might try to change the outcome of the census by inappropriately altering population information on mail returned questionnaires. We sampled 12,000 mail-returned questionnaires and monitored changes to their population information as they moved through district office review and tabulation

operations. Overall, the population data on 11,586 questionnaires (about 97 percent) did not change from the time they were received until they were sent to data processing offices for final tabulation.

For the 373 mail-returned questionnaires (about 3 percent) on which changes were made to their population data, census records show that 209 changes (about 56 percent) resulted from questionnaire consistency checks. For example, respondents were asked to list household members twice on the questionnaire as a check for completeness. If the listings did not match, the questionnaire failed edit and the households were contacted to resolve the inconsistencies. Other questions identified persons at the household but not counted as members of the household. In some cases, household members not counted should have been counted at the housing unit. The changes to the other 164 questionnaires (about 44 percent) apparently resulted from other Bureau procedures used to check the accuracy of selected questionnaires. We did not try to see if these other procedures accounted for the changes to the 164 questionnaires. Verification of the changes would have required contacting the households, which was beyond the scope of our review.

The following table summarizes, by urban location, the extent of changes to population data for sampled questionnaires in the 40 district offices reviewed. The table also shows the net amount of population change resulting from consistency check changes and changes not accounted for.

Urban area	Number of mail-returned questionnaires: Sampled	Not changed	Changed from consistency checks	Net population change	Change not accounted for	Net population change
Chicago, IL	1,800	1,757	35	+54	8	+ 1
Cleveland, OH	900	883	15	+11	2	+ 2
Detroit, MI	1,200	1,140	38	+44	22	-21
Los Angeles County, CA	2,400	2,313	31	+59	56	+18
New York, NY	2,100	2,050	27	+20	18	- 1
Newark, NJ	300	283	7	+14	10	-34
Philadelphia, PA	900	861	18	+21	19	+21
Pittsburgh, PA	600	573	10	+ 7	11	0
San Francisco Bay area, CA	1,500	1,427	28	+43	18	-18
West New York, NJ	300	299	0	0	0	0
Total a/	12,000	11,586	209	+273	164	-32

a/Columns do not total 12,000 questionnaires because 41 sampled questionnaires could not be retrieved for additional analysis.

The percent of mail-returned questionnaires on which population changes were made ranged from none in West New York to 6 percent in Newark. Overall, changes were made on 3 percent of the mail-returned questionnaires. Fifty-six percent of these changes resulted from consistency checks and resulted in net population increases in each geographical area sampled. The remaining 44 percent, which we did not account for, resulted in net population changes ranging from a reduction of 34 persons in Newark to 21 persons added in Philadelphia.

Our findings show that changes to questionnaires play a significant role in arriving at an area's final population count. Although we cannot estimate with statistical precision what this effect might be (because of the limited size of our sample) there is no doubt that it could have been significant for areas such as those in Philadelphia and Newark where a relatively large number of questionnaires were changed.

Our data suggests that in Philadelphia, for example, the city's population count should have increased as a result of population changes to mail-returned questionnaires. On 37 of the 900 questionnaires returned by mail to 30 randomly selected enumeration districts in Philadelphia there were changes. If this rate of change occurred for the 529,205 mail returns,

about 27,000 persons reported could have been added to the city's count. Half the expected changes would result from consistency checks. The other half of the expected changes, which were not accounted for would need to be verified. Because of the range around our estimate the actual amount of population added could be between 12,000 persons and 41,000 persons.

Newark experienced the largest amount of change to mail-returned population information of any area reviewed. Overall, the city had 6 percent of its sampled mail returns changed. The changes amounted to a loss of 20 persons for the 300 questionnaires sampled. If what we found for our sample questionnaires drawn from 10 randomly selected enumeration districts at the Newark office holds true for the 64,036 questionnaires returned by mail the net effect could be the deletion of 4,262 reported persons from Newark's final population count. About 41 percent of the expected change would result from consistency checks adding some 3,000 persons. The remaining changes, which would need to be verified, could possibly result in the elimination of some 7,200 names reported by respondents. Because of the range around our estimate the actual amount of change experienced could be between a deletion of 11,398 persons to the adding of 2,874 persons.

We only offer these types of analyses to help the reader understand the effect changes made by district offices to population information could have. Our findings cannot be generalized to the work of these offices or any other district office.

Few population counts changed
during review and followup operations

Review and followup operations conducted at district offices provided another opportunity for employees to inappropriately alter respondent population information. For this reason we examined an additional sample of 4,000 questionnaires which had failed the district offices' edit reviews because of being incomplete or incorrectly filled out.

Questionnaires which failed edit were assigned for telephone followup. Employees were to call the households and obtain the needed information. When households were contacted, the clerks were to check that everyone residing in the houses on April 1 had been counted. Clerks read the names of the persons listed on the questionnaires. If persons had been missed, clerks entered the missed persons' names on the questionnaires and obtained answers to the population questions.

Of the telephone followup questionnaires examined, 3,677 questionnaires (about 93 percent) did not have any changes made to respondent supplied population information. Of the 255 questionnaires on which changes were made to respondent-supplied population information, 193 were changed because respondents supplied incomplete or incorrect data. The reason for the remaining 63 changed questionnaires could not be obtained from information on the questionnaires as originally supplied by the respondents. This does not mean that the changes to these 63 questionnaires were inappropriate. The changes could have occurred as a result of the name check procedure, which clerks were not required to document. Changes also could have resulted from other procedures which checked for persons located at households but not reported by respondents. Contacting the households is the only practical way to verify such changes.

The following table shows, by urban area, the number of questionnaire changes. The table also shows the net amount of population change resulting from changes to population data for sampled questionnaires.

Number of questionnaires--telephone followup

Urban area	Sampled	Not changed	Changed from consistency checks	Net population change	Change not accounted for	Net population change
Chicago, IL	600	555	29	+ 36	7	0
Cleveland, OH	300	277	20	- 1	3	- 5
Detroit, MI	400	369	28	+ 61	3	- 2
Los Angeles County, CA	800	743	37	+ 38	15	- 1
New York, NY	700	619	31	+ 36	8	- 1
Newark, NJ	100	91	0	0	9	- 8
Philadelphia, PA	300	284	13	+ 15	2	+ 5
Pittsburgh, PA	200	174	13	+ 23	5	- 2
San Francisco Bay area, CA	500	466	21	+ 17	11	+ 1
West New York, NJ	100	99	1	+ 2	0	0
Total a/	4,000	3,677	193	+227	63	-13

a/Columns do not total 4,000 questionnaires because 67 sampled questionnaires could not be retrieved for additional analyses.

As the table shows, changes made to population information during the telephone followup could have had an appreciable effect on the population count for urban areas. Our data suggests Philadelphia's population count could have increased

as a result of review and followup. Populations on 15 of every 300 questionnaires sent for followup could have changed. If this rate of change occurred for the 263,577 reported questionnaires sent for followup, upwards of some 6,800 persons could have been added. About 87 percent of the expected change would result from consistency checks. The other 13 percent of the expected changes, which were not accounted for would need to be verified. Because of the range around our estimate the actual amount of change occurring could be between a deletion of 3,031 reported persons to an addition of 16,685 persons.

As stated earlier, this type of analysis is offered to help the reader understand the effect changes made by district offices to population information could have. Our findings cannot be generalized to the work of this or any other district office.

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Overall, the population information supplied on questionnaires returned by mail was generally the same information entered in Census Bureau data banks. We found no instances of inappropriate altering of counts.

ENUMERATOR-OBTAINED HOUSEHOLD COUNTS WERE REASONABLE

Enumerator population counts for nonresponding households are reasonable when compared with questionnaires returned in the mail. In 37 of 40 district offices we found no significant difference between the average household size reported on questionnaires completed by enumerators and those on questionnaires returned through the mail.

When questionnaires were not mailed back, enumerators were sent to the nonresponding units to determine their status and count any persons who might be living there. Enumerators were to determine if a nonresponding housing unit was occupied, vacant, or nonexistent and to complete a questionnaire for the unit. If the unit was found occupied, its household was to be counted. If the unit was vacant, the enumerator was to obtain certain information about the unit and close out the case. If the unit was found to no longer exist, the address listing was to be deleted. The Bureau estimated that completed questionnaires were not received for about 23 million housing units by the start of followup operations in April.

We selected 400 enumeration districts at the 40 district offices reviewed to test the reasonableness of enumerator-obtained population counts. Enumerators assigned to the 400

districts had to follow up on 44,505 nonresponse cases. Enumerators found 29,066 housing units occupied, 6,079 units vacant, and no structures for 8,033 units. The remaining 1,327 units represented unclassified units; units which were not enumerated by the end of followup operations. The following table shows, by urban area, the overall average household sizes reported by enumerators for the selected districts and the average household sizes reported on mail returns for the same districts.

Average Household Count

Urban area	Enumerators	Mail returns
Chicago, IL	2.6	2.5
Cleveland, OH	2.7	2.8
Detroit, MI	2.8	2.7
Los Angeles County, CA	2.7	2.6
New York, NY	2.5	2.8
Newark, NJ	2.9	3.1
Philadelphia, PA	2.3	2.2
Pittsburgh, PA	2.3	2.7
San Francisco Bay area, CA	2.2	2.5
West New York, NJ	2.3	2.3

We tested individual district office data to determine whether there was any significant difference between the average population counts reported on questionnaires received by mail and those on questionnaires completed by enumerators. 1/ For all but three district offices in Detroit, Pittsburgh, and San Francisco, no significant difference was found. Further followup with the households in the three areas affected would be needed before the reasons and their acceptability could be ascertained.

Also tested was the cumulative district office data for eight urban areas reviewed because more than one district office was involved in each area. The test was used to determine whether there was any overall significant difference between the average population reported by enumerators and on mail returns. For all but New York and Pittsburgh there was no significant difference found. Enumerators in New York and

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1/In the above analyses, we used a generally accepted statistical technique to determine significance at the 90 percent confidence level. The technique is described briefly in appendix III.

Pittsburgh always reported significantly fewer persons than were reported by households. Our tests, while not conclusive, are reason for concern. Again followup with households in the areas affected would be needed to determine the reasons for the differences and their acceptability.

GAPS IN POPULATION INFORMATION DIMINISH RELIABILITY OF SOME DATA

Some gaps in population information exist because persons were counted without obtaining data from them. For example, at 19 of 40 sampled district offices, this occurred when employees replaced questionnaires district offices lost during processing and closed out some nonresponse cases. Gaps in population information diminish the reliability of census population data for persons living in the areas.

Initially, questionnaires were not to be accepted, according to Census Bureau guidelines, if they did not contain at least minimum information, referred to as last resort information, for a household. The Bureau required that questionnaires have the name of each person counted and at least three of the following four pieces of information about each person:

--Relationship to household member who owned or rented the unit.

--Sex.

--Race.

--Marital status.

Also required was certain minimum information about the housing unit. These standards applied to all questionnaires, including those used to replace questionnaires district offices had lost during processing operations.

District office staffs were directed to reject any questionnaire which did not contain the minimum amount of required information. These questionnaires were to be returned to the enumerators who completed them. The enumerators were to go back and obtain at least last resort data on the households.

An examination of 81,060 questionnaires for 183 enumeration districts in 19 district offices showed that 1,586 accepted questionnaires did not meet the Bureau's minimum standards for acceptable population information. The following table shows our findings by urban area.

Urban area	Sampled district offices	Questionnaires Reviewed	Questionnaires Unacceptable
Chicago, IL	2	9,906	460
Detroit, MI	2	6,007	131
Los Angeles County, CA	8	38,249	183
Newark, NJ	1	3,937	111
Philadelphia, PA	1	1,284	30
San Francisco Bay area, CA	5	21,677	671
Total	19	81,060	1,586

After our review, the Bureau lowered its standards for minimum information. The revised standards allowed employees to merely list a population count for a housing unit with no information about the people counted.

Questionnaires which lacked the minimum amount of acceptable information were adjusted. When information on a person was missing, Bureau computers were used to allocate age, sex, race, and other characteristics to the person. In some cases the Bureau also imputed entire families for housing units and allocated characteristics data for the nameless family assigned there.

Questions on population information surface only when individual questionnaires are examined. This occurred when enumerators were unable to reach residents to replace questionnaires which had been lost after receipt at district offices or were missing because a completed form had not returned. The following three examples show how district office employees used "nameless families" to replace lost or complete unreturned questionnaires.

Philadelphia

At a district office in Philadelphia, we found cases where population counts for questionnaires appeared arbitrarily assigned. One enumerator closed out 17 questionnaire followup cases assigned to him by entering only a population count of 1. An examination of questionnaires resolved by other enumerators at the same district office revealed the same situation had occurred.

When we discussed our findings with Census Bureau officials, they ordered an investigation of the Philadelphia district office. A 10-percent sample of enumeration districts was drawn, and each questionnaire was examined to

ascertain to what extent questionnaires had been filled out with nameless persons. On September 5, 1980, the Regional Director for the Philadelphia Region reported that of 12,553 questionnaires examined, 639 lacked the minimum amount of required information. Of these, 215 questionnaires represented vacant housing units and 424 represented occupied units filled with nameless families. The Bureau study did not provide any information on the sizes of the 424 households whose questionnaires represented nameless families. A check of Bureau computerized records for the district office showed that population and demographic information had to be imputed for 12,133 or about 4 percent of the 315,856 persons counted by the district office.

Projecting the Census Bureau results to the universe of 130,100 households enumerated by the Philadelphia district office, we believe that at least 4,300 of these households may represent nameless families for which the Bureau will allocate age, sex, and racial characteristics.

Bureau officials believed the amount of housing units filled with nameless people by the Philadelphia office was acceptable. The acting chief of the Bureau's Field Division said the number of questionnaires was acceptable to him. The Regional Director for the Philadelphia Region said this action was necessary in part because the area was hard to enumerate and/or had racial problems. The enumerators got what information they could, in the Regional Director's opinion.

San Francisco and Newark

In the San Francisco Bay area, we found that due to problems encountered in obtaining completed questionnaires within set deadlines from a predominantly low income black enumeration district, one district office had begun a special enumeration blitz. Enumerators were instructed to simply obtain population counts and to ignore demographic or housing data unless it was readily evident or volunteered. This process resulted in 449 questionnaires being obtained for that district with only some age, race, and sex data provided.

Population information was not always obtained for questionnaires lost after receipt by district offices. For example, our examination of 70 questionnaires listed as lost by the Newark district office in our 10 sampled enumeration districts showed that all 70 had population counts which were taken from the mail address registers. Name, sex, age, and marital status information were not obtained for the 171 persons counted.

We tried to determine the extent this was occurring in the other urban areas reviewed. We found similar occurrences at eight other district offices. We could not obtain this type of information for all 40 district offices because we became aware of the shortcoming after 21 of the district offices had closed.

The practice of accepting incomplete questionnaires could lead to possible miscounting for some urban areas reviewed. This would occur if enumerators imputed population counts which differed significantly from those reported on acceptable questionnaires. Because the Bureau did not assess the use of nameless families, there was no way to ascertain the extent to which enumerators may have used the practice to close out their workloads. Contacting households is the only practical way to verify the reasonableness of enumerator imputations.

One harmful side-effect of enumerator imputing was the overriding of Bureau controls for imputing population during data processing operations. The Bureau used its computer to impute family population counts for housing units not counted by enumerators. When computer imputes were made for an area the computer made them based on the area's reported population. According to the Bureau, this method should have resulted in imputed household sizes which closely approximated those reported on acceptable questionnaires.

CONCLUSIONS

The Census Bureau's use of the mails to collect census data appears to have worked satisfactorily in the district offices reviewed. Overall, 75 percent of the housing units in the 40 districts mailed back questionnaires. The population counts supplied by respondents on questionnaires sampled were generally complete. Overall, the population counts on 97 percent of the questionnaires sampled did not change from the time of receipt until they were sent to data processing offices for final tabulation. When changes were made they generally resulted from respondents' failure to provide complete information.

In addition, household population counts obtained by enumerators for selected enumeration districts usually appeared reasonable. At the individual district office level, we found no significant difference in 37 of 40 district offices between the average household sizes reported by enumerators and those reported by respondents. Further testing is needed to determine why significant differences exist between the average household sizes of the two groups at the three district offices in Detroit, Pittsburgh, and San Francisco.

We also conducted the same test at the urban area level using the cumulative data for the district offices reviewed. For six of the eight areas there was no significant difference found between the coverage population reported by households and enumerators. A significant difference was found for the New York and Pittsburgh areas where enumerators consistently reported fewer persons than reported by households. Further testing is needed to determine the reasons for the differences and their acceptability.

We did not detect any widespread inappropriate altering of population counts reported on mail returns. Neither did we find any evidence to show any widespread effort on the part of enumerators to inappropriately report household populations. This is not to say that inappropriate reporting did not occur. However, it did not appear to be a problem for our sampled questionnaires and enumeration districts.

Although the bulk of the population information appeared acceptable, some gaps in the quality of population information were found. Some district offices failed to replace characteristics data for persons on some questionnaires which were lost after they had been received. These same district offices were found to have used nameless families to close out some of their caseloads. How significant and widespread these practices were is difficult to gauge since there was a breakdown in Census Bureau controls. The Bureau's tally of imputed persons will not reflect the inappropriate closing of cases with nameless families. If the practice of using nameless families is extensive, accuracy of information regarding age, sex, and race of a city's population could be affected.

CHAPTER 3

TECHNIQUES USED TO ALLEVIATE UNDERCOUNTS

Concern over undercounts caused the Census Bureau to implement procedures aimed at locating and counting persons who otherwise may have been missed. Nationwide, the Bureau expected to count between 6 million to 10 million persons during special place operations, which included searches of places such as hospitals and prisons. There were a number of other Bureau efforts to improve coverage including reviewing driver license records and the use of special questions. The operations examined are discussed in this chapter and in chapter 4.

Overall, the special place operations went well. Some problems were found in the coverage improvement operations reviewed which could contribute to undercounting in the urban areas.

SPECIAL PLACE OPERATIONS COUNTED THOUSANDS OF PERSONS NOT RESIDING IN PRIVATE HOUSEHOLDS

The Census Bureau conducted special operations to count persons not residing in private households. A total of 263,648 persons were located and counted by the special place operations carried out by the 40 district offices reviewed. All the 10 urban areas benefited from these operations. In no instance did we find the number of persons counted by a district office to be excessively high or unreasonable.

An overview of the special place operations

Special places canvassed included group quarters, T-night places, M-night places, and Casual Count places. The Census Bureau identified two types of group quarters to be enumerated: institutional and noninstitutional. Institutional group quarters were living quarters occupied by one or more persons under custody or care, such as patients in nursing homes and prisoners in penitentiaries. If these persons occupied more than one building, each building was considered a separate group quarters. Also, if a building housed both males and females, the persons of each sex were considered to occupy separate group quarters.

Noninstitutional group quarters were considered to be dormitories, fraternity and sorority houses, general and maternity wards in hospitals, and halfway houses. Also

included were any living quarters occupied by 10 or more unrelated persons such as large rooming or boarding houses. If the persons, in noninstitutional group quarters occupied more than one building, each building was considered a separate group quarters.

T-night places were hotels and motels charging more than $4 per night and included YMCAs, YWCAs, and resorts. M-night places were missions and flophouses charging $4 or less per night and bus depots, railway stations, and other places where people were known to spend the night. Casual Count places included welfare offices, food stamp centers, pool halls, and other places where persons that were not counted by other census operations could be found.

Special place enumerations were scheduled for different times during the census. Group quarters enumeration was scheduled for April 1 through April 25. T-night was on March 31. M-night was the evening of April 8 and morning of April 9. Casual Count occurred only in large cities and was scheduled from May 6 through May 20.

The Bureau expected to count from 6 million to 10 million persons or about 3 to 5 percent of the population, in special places. It had no estimates of expected counts for specific types of special places; however, in 1970, group quarters, T-night, and M-night enumerations accounted for 6 million persons, or 2.8 percent of the population. About 2.6 percent of the 1970 population was counted in group quarters, while the M-night operation yielded less than 0.2 percent and T-night 0.01 percent. Casual Count operations were not used in 1970, but 1980 pretest results yielded a 0.1 to 0.4 percent increase in population in urban areas.

Quality controls

The Census Bureau's quality controls on taking special place counts included advance population estimates, the number of transient rooms in T-night places, and establishing enumerator workloads.

Before special place enumeration began, census employees obtained population estimates from individuals in charge of group quarters and M-night places. These estimates were used to check the completeness of counts.

A completeness check was done by Special Place Crewleaders. After each group quarter was enumerated, the crewleader compared the number of persons counted and recorded with the place's population estimate. If the persons enumerated deviated from the estimate by more than plus or minus

10 percent, or more than 10 persons, the crewleader visited the place in question and had the manager review the count. Crewleaders were to note the dispositions of their reviews.

Before T-night, clerks telephoned T-night places and obtained the number of transient rooms there from the persons in charge. These numbers were used to determine the number of enumerators needed for T-night.

On T-night enumerators hung Individual Census Report packets on the door knobs of the transient rooms. Each packet contained two abbreviated questionnaire forms and an envelope for mailing them to the appropriate district office. The number of forms returned was not to exceed two times the number of transient rooms.

Bureau-estimated enumerator workloads for special place operations served as a guide to monitoring the reasonableness of special place counts. Group quarters workloads were delineated so that each enumerator was expected to count 270 persons. Each T-night enumerator was expected to visit 5 places or distribute 500 packets. Each M-night enumerator was expected to count 30 persons. No specific enumerator workload was designated for Casual Count. The four two-person enumerator teams assigned in each district office to the Casual Count operation could count only a limited number of persons during the 2-week Casual Count period. According to the Bureau official responsible for special place planning, a reasonable workload for the 4 teams would be to count between 5,000 to 10,000 persons.

Test checks of special place counts

Our review of special place operations was performed at the sample 40 district offices. The data shown below represent the best available when we completed our work. In a number of instances, we could not obtain complete final counts from the district offices examined.

Group quarters counts

A total of 4,439 group quarters were enumerated in the 40 district offices reviewed. This was 18 group quarters more than were identified before the group quarters operation. Although more group quarters residences were located, the number of persons counted was less than initial population estimates for the known group quarters. The following table shows, for urban areas, the results of the group quarters operations at the district offices reviewed.

Urban area	Group quarters		Population	
	To be counted	Counted	Estimated a/	Counted
Chicago, IL	360	360	29,929	27,908
Cleveland, OH	302	283	19,214	17,881
Detroit, MI	358	340	22,488	21,520
Los Angeles County, CA	1,109	1,113	66,681	66,656
New York, NY	385	382	34,859	30,691
Newark, NJ	35	60	1,562	2,176
Philadelphia, PA	489	452	24,557	24,375
Pittsburgh, PA	197	197	22,414	19,301
San Francisco Bay area, CA	1,136	1,177	47,051	44,567
West New York, NJ	50	75	3,745	3,573
Total	4,421	4,439	272,500	258,648

a/Estimated population figures reflect only population in the column of group quarters to be counted.

Overall, the actual population counted in group quarters was 13,852 persons (about 5 percent) less than expected in the urban areas reviewed. New York, Newark, and Pittsburgh all experienced what the Bureau considered a significant difference between their estimated and actual population counts.

According to the Bureau, a difference was significant when the actual population count differed from the estimated population by 10 percent or more. In the case of Pittsburgh, 124 of the 197 group quarters enumerated experienced significant differences. Bureau procedures required that significant differences be resolved. Crewleaders were to verify that the reported counts were correct and, if not, have them corrected. To verify counts, crewleaders were to visit the places in question and have the managers review the counts. Crewleaders were to note the dispositions of their reviews on district offices records.

In Pittsburgh, district office records showed that 108 of the 124 group quarters counts in question had been verified. The enumerated counts for the remaining 16 places showed 212 fewer persons than the estimated counts. Therefore, the apparent failure to resolve the 16 cases represents a potential undercount.

New York City experienced a 12 percent difference between its estimated and actual group quarters population counts. The differences were not resolved because of poor management

practices on the part of special place supervisors. For instance, one special place supervisor did not require crewleaders to verify and resolve discrepancies because she was not aware of the procedure. Another special place supervisor saw no need to verify and resolve discrepancies between estimated and actual counts because the supervisor believed the estimates were just that, estimates.

Newark also experienced a significant difference in its group quarters population count. The difference resulted from the finding and enumerating of additional group quarters after the operation began. For these, the Census Bureau did not have population estimates beforehand.

Transient population counts

On T-night the 40 district offices distributed about 146,500 T-night packets containing 293,000 individual census returns to places charging over $4 a night for a room. The T-night operation is designed to identify people away from their usual residence around Census Day, such as families on vacation or individuals away from home on business who might not be counted at their usual residence. It also identifies persons who might be living at the places. About 22,275 (8 percent) of the individual census reports were returned. Of these 8,832 (3 percent) were from persons who had no other residences and 13,443 (5 percent) were from persons who were temporarily away from their residences.

The following table shows, by urban area, the individual census reports distributed and returned for the T-night operation at the 40 district offices reviewed.

Urban area	Individual census reports distributed	Reports returned by Travelers	Reports returned by Residents
Chicago, IL	45,406	1,906	540
Cleveland, OH	22,556	710	165
Detroit, MI	23,012	1,003	770
Los Angeles County, CA	87,174	3,742	4,661
New York, NY	2,509	9	6
Newark, NJ	2,668	56	73
Philadelphia, PA	15,938	509	137
Pittsburgh, PA	10,942	839	178
San Francisco Bay area, CA	79,481	4,580	2,221
West New York, NJ	3,418	89	81
Total	293,104	13,443	8,832

The number of individuals returning reports is small compared with the number of reports distributed. Of these, the number of persons found who were not counted elsewhere will probably be less than the number of reports returned. The reports of the 13,443 travelers were to be further checked with district office records at the residence location to avoid possible duplicate counting.

M-night counts

On M-night enumerators in the 40 districts visited 435 places housing persons who have no real homes. Very close to Census Day, enumerators sought out people in missions, all-night movies, and local jails and detention centers. Also canvassed were bus and railroad stations and other places where people without homes were likely to sleep overnight. As the table below shows, overall 11,191 persons were found and counted.

Urban area	Places visited	Population counted	Average enumerator workload
Chicago, IL	62	1,109	41
Cleveland, OH	78	454	13
Detroit, MI	46	497	17
Los Angeles County, CA	143	3,682	44
New York, NY	12	4,488	23
Newark, NJ	8	208	26
Philadelphia, PA	12	200	14
Pittsburgh, PA	35	194	Not available
San Francisco Bay area, CA	34	354	Not available
West New York, NJ	5	5	1
Total	435	11,191	

The number of persons counted during the M-night operation is in line with the Bureau's expected number of persons to be counted by an enumerator. According to the the Bureau, a reasonable enumerator workload should not have exceeded 30 persons counted. This was the criterion used by the Bureau for determining the number of enumerators needed to carry out the M-night operation.

As the table above shows, enumerators in Chicago and Los Angeles exceeded the expected M-night workload. Enumerators in Los Angeles counted 47 percent more persons because two of eight district offices reviewed carried out their M-night operation over a 4-day period rather than just the

established 1-night effort. In Chicago, enumerators counted 37 percent more persons than expected. The high count occurred because a mission housing 426 persons and a city jail holding 81 detainees were located within the area covered by 1 of the 6 district offices reviewed.

Casual Count

Another special enumeration procedure, designed to count persons who may not have any usual residences, was the Casual Count operation. This operation was a new program developed for the 1980 census and was conducted only in large cities such as New York. About 6 weeks after Census Day, enumerators were sent to places where individuals might congregate. Such places included employment offices, street corners and bars. The difference between this operation and M-night was the type of places visited and the length of time the operation was carried out--about 2 weeks for Casual Count versus 1 night for M-night.

Casual Count operations were done at 27 of the 40 district offices reviewed. The following table shows, by urban area, the results of the Casual Count operations for the 27 offices.

Urban area	Number of offices reviewed	Population counted
Chicago, IL	5	12,751
Cleveland, OH	1	752
Detroit, MI	2	769
Los Angeles County, CA	4	2,486
New York, NY	7	4,454
Newark, NJ	1	185
Philadelphia, PA	3	1,085
Pittsburgh, PA	1	356
San Francisco Bay area, CA	2	3,280
West New York, NJ	1	48
Total	27	26,166

To assess the reasonableness of Casual Count we used criteria developed through discussion with the Census Bureau official who planned it. According to the official, the Bureau set 5,000 persons as a reasonable workload tolerance for a district office. We did not question a district office's Casual Count, therefore, if it did not exceed 5,000 persons. If

more than 1 district office was involved in the Casual Count operation in an urban area we allowed a maximum of 5,000 persons for each office included.

In no instance, did the number of persons enumerated by a district office's staff exceed the 5,000 person workload tolerance. As the table above shows, a number of people were found and counted in Chicago, New York, and San Francisco. In the other urban areas, the Casual Count operations found and counted few persons.

THE NONHOUSEHOLD SOURCES PROGRAM: A RECORDS CHECK FOR MISSED PERSONS

The Census Bureau obtained lists of names and addresses from outside sources, such as State Departments of Motor Vehicles and the Immigration and Naturalization Service, to use as a second check of the accuracy and completeness of census coverage. The steps in this process were difficult and expensive, according to the Bureau. Because the process was cumbersome and expensive the program was conducted on a selective basis in Black and Hispanic areas. The names and addresses from the list were matched with census questionnaires. Unmatched names represented potential misses in census counts. District offices tried to contact households having unmatched persons, either by telephone or personal visit.

Based on precensus test results, the Bureau believed the coverage improvement yield from the program looked encouraging. The Bureau concluded the program would be an effective means for improving coverage of minority persons. Precensus test results for Camden, New Jersey, showed that the matching of 6,000 names and addresses yielded 370 persons (about 6 percent) who had been missed. A similar yield of 6 percent was obtained in pretests done in Pima County, Arizona, and Travis County, Texas.

These kinds of yield apparently were not experienced in the 1980 census in urban areas we reviewed. The following table shows the total results of the records check program for 16 district offices in 3 of the urban areas reviewed.

Urban area	Names to be matched	Population added	Percent
Los Angeles County, CA	488,914	11,641	2
Cleveland, OH	27,449	412	2
San Francisco Bay area, CA	298,043	3,711	1

Total results for the other district offices reviewed were not available because they did not keep adequate records. However, analyses of our sample 12,000 mail returned questionnaires suggests that matching nonhousehold data with questionnaire data identified few missed persons. Only 21 persons were added by this operation to the 12,000 questionnaires drawn from 40 district offices in 10 major urban areas. In 4 of the urban areas, no additional persons were identified even though over 323,000 names had been matched. These areas included West New York, Newark, Pittsburgh, and Philadelphia. For the remaining six urban areas the total number of persons added to our sample questionnaires ranges from a low of two in New York City, and Cleveland, to a high of nine in Los Angeles.

Although the number of persons added through the nonhousehold record checks appears small, there is no way of checking the procedure short of redoing the checks. This would involve contacting households, which was beyond our scope of work.

COVERAGE IMPROVEMENT THROUGH QUESTIONNAIRE EDIT FALLS SHORT OF EXPECTATIONS

All questionnaires were reviewed, or edited, to check that a sufficient number of questions were properly answered. In addition, a small set of questions was asked in an effort to reduce coverage loss.

Question H-4 asked "How many living quarters are there in the building in which you live?" For addresses with 10 or fewer units (as determined by the mail-out count), the response on the returned questionnaire was compared with the mail-out count of living quarters at the address. If the response showed more living quarters than the questionnaire mailed, an enumerator was sent to the building to check whether every housing unit had been enumerated.

Another question located on the front cover of the questionnaire asked respondents to list the names of all persons living at the households on Census Day and/or those persons staying and who had no other homes. These answers were compared with the names of all persons at the households listed by the respondents on question two inside the questionnaire. If the response to the question on the front showed more persons living at the units than information was provided for in question two, the households were contacted by phone and/or personal visits to check whether every person had been enumerated.

Bureau overlooks potential housing units

District office personnel did not always resolve housing unit discrepancies identified by editors to be checked, and the editors, likewise, did not always identify housing unit discrepancies to be checked. The failure to detect and resolve discrepancies could result in an undercount in the urban areas reviewed.

The following table shows, by urban area, the amount of housing unit discrepancies identified by editors which went unresolved. This was done for our sample of 400 enumeration districts at 40 district offices.

Urban area	Number of enumeration districts		Enumeration districts having problems		
	Sampled	Having problems	Number of structures	Potential number of overlooked units	Average units per structure
Chicago, IL	60	45	369	1,166	3.2
Cleveland, OH	30	11	27	43	1.6
Detroit, MI	40	37	414	704	1.7
Los Angeles County, CA	80	50	320	825	2.6
New York, NY	70	24	82	136	1.7
Newark, NJ	10	9	56	108	1.9
Philadelphia, PA	30	17	34	80	2.4
Pittsburgh, PA	20	17	102	230	2.3
San Francisco Bay area, CA	50	32	191	369	1.9
West New York, NJ	10	2	3	3	1.0
Total	400	244	1,598	3,664	2.3

As the table shows, about 61 percent, or 3 out of 5 enumeration districts sampled had unresolved housing unit discrepancies. Potentially occupied units were overlooked at an average of 15 units for each enumeration district with the problem. This problem is compounded by editors failing to always detect housing unit discrepancies. We did not become aware of this problem until work was completed in 4 of our 10 urban area locations. The following table, therefore, reflects our findings at eight district offices in six urban areas.

Urban area	Number of enumeration districts		Enumeration districts having problems		
	Sampled	Having problems	Number of structures	Potential number of overlooked units	Average units per structure
Chicago	6	6	42	166	4.0
Los Angeles County, CA	10	1	50	105	2.1
New York, NY	13	11	68	82	1.2
Newark, NJ	10	9	58	104	1.8
San Francisco Bay area, CA	11	8	98	213	2.2
West New York, NJ	4	4	20	27	1.4
Total	54	39	336	697	2.1

We believe that the potentially missed units is a possible serious problem. As the table above shows, 72 percent, or 7 out of 10 enumeration districts sampled, had undetected unit discrepancies. There are about 320,000 enumeration districts nationwide; however, the reader is cautioned against extending our results, which are not statistically projectable. Determining the actual effect of overlooked units is difficult. The Census Bureau did not collect information on the amount of overlooked housing identified and resolved. Before the question of the effect of overlooked housing can be resolved, the Bureau will need to review its 1980 census records to ascertain the extent to which units were overlooked. Additional work in the form of followup visits and/or telephone calls may be necessary to determine the status of and population in overlooked units.

Some of the unresolved discrepancies resulted from poor practices on the part of employees. A field supervisor who taught the H-4 edit resolution procedure in Cleveland said the procedure was very confusing to most people. We were advised that unless the questionnaires and other census records clearly showed the discrepancy had been resolved, the case should be viewed as unresolved. We also found that questionnaire markings used to show the discrepancy as resolved were not an accurate indicator of the true status of the discrepancy. In Cleveland, for example, the same marking procedure was used to show resolved and unresolved cases. Our lists showed that sometimes the discrepancy had been resolved, while other times it had not. In short, failure to use a consistent pattern of recordkeeping resulted in the creation of inaccurate data and possibly an undercount in some urban areas.

According to district office officials in Cleveland and Detroit, inadequate staff, training, guidelines, and time also caused the operation to fall short of expectations.

We discussed our findings with Census Bureau officials who agreed that a further examination was warranted. They agreed to ascertain if the addresses we had identified contained missed units or if our findings reflected large amounts of clerical error by district office employees. We provided 899 addresses in 4 urban areas which we identified as containing 2,346 potentially missed units.

The Bureau's investigation failed to fully and adequately address the discrepancies reported. The following table shows the Bureau's findings.

	Discrepancies			
Urban area	Reported by GAO	Investigated	Resolved	Verified but not resolved
Chicago, IL	272	222	222	0
Detroit, MI	118	0	0	Not applicable
Los Angeles County, CA	320	230	67	163
San Francisco Bay area, CA	189	160	84	76
Total	899	612	373	239

As the table shows, 287 reported discrepancies were not investigated. In Detroit 118 discrepancies were not investigated, according to the Bureau official overseeing the work, because all district office records had been shipped for data processing. The Bureau did not fully investigate the other 169 discrepancies because the questionnaires were not marked on the front as having discrepancies. This was an incorrect assumption because district office employees failed to mark the questionnaires properly. To detect the problem, the questionnaires had to be reedited; therefore, the 169 cases are still unresolved.

For the 373 discrepancies resolved by the Bureau, only 97 were resolved through field followup visits all in Chicago. The visits produced 11 households which had been overlooked earlier. A records check for the other 276 resolved cases showed that they had been resolved since we completed our fieldwork. Of these, 163 discrepancies were resolved, we

believe, because we had previously notified district office managers of the problem before district offices closed.

The Bureau has no plans at this time to follow up the 239 examples which it had verified as valid unresolved discrepancies. Failure to followup in these cases could result in an undercount for the areas affected.

Because of the limited scope of our work, nothing can be concluded about the total amount of housing units missed in the four urban areas because the H-4 operation was not properly carried out. If this procedure is to be used in future censuses, the Bureau will need to place greater emphasis on insuring that the operation is implemented as designed.

Nonresponse limits coverage improvement efforts

The Census Bureau believed census coverage could be improved by having respondents list the names of all persons living, staying or visiting in their housing units. Many respondents did not comply with the Bureau's request,thus limiting the benefits obtained through this technique.

In an effort to identify persons who might be missed, the Bureau added a special question to the 1980 census questionnaire. The new question (question one) located on the first page, asked respondents to list the names of all persons living in their households on Census Day and/or those who were staying or visiting there and who had no other homes. The names listed under question one were compared with the names listed under question two. When the response to question one was larger than the number of persons shown in question two, the Census Bureau directed a followup interview be conducted to resolve the difference.

The expected benefits might have been compromised because substantial numbers of respondents failed to complete question one. Respondents did not complete question one for 4,203 (about 26 percent) of the 16,000 questionnaires examined. The Bureau did not follow up with respondents who had not answered the first question. Instead it presumed that the number of persons listed under question two was correct.

This may have been an unwarranted assumption by the Bureau. When respondents answered the first question, 5 percent of the time they listed more persons in that question than they provided detailed information for in question two--the question used to determine the population count. What this means is 210 of the 4,203 households which did not fill out question one may contain more persons than were counted.

Substantial numbers of respondents did not answer the first question. The Bureau kept no record of discrepancies. It also did not microfilm the first page of census questionnaires. Because there are no records and no way to resolve discrepancies, no one will ever know how many persons were missed in an operation designed to identify missed persons.

CONCLUSIONS

There were some problems in coverage improvement operations which could contribute to undercounting. District office personnel did not always resolve housing unit discrepancies which had been identified by editors to be checked, and editors, likewise, did not always identify discrepancies to be checked. The failure to detect and resolve discrepancies did result in some documented undercounting in the urban areas reviewed. How widespread or serious any undercounting is caused by failure to detect and resolve discrepancies cannot be estimated based on our limited work.

The expected benefits of a special coverage improvement question appear to have been compromised because substantial numbers of respondents did not answer the question. The Census Bureau's decision to not follow up on the nonresponses may contribute to an undercount in areas reviewed.

The special place procedures appear to have adequately enumerated persons in places who could otherwise be missed in a mail-out/mail-back census. The numbers of persons counted appears reasonable when compared with the results expected by the Bureau. These procedures may represent the best way to enumerate people with no usual homes or who are away from their permanent residences.

CHAPTER 4

LOCAL OFFICIALS ASSESS COMPLETENESS OF CENSUS HOUSING DATA

A new program to enlist the help of local government officials in 39,500 communities was launched by the Census Bureau in an effort to make the 1980 census the most accurate ever. To reduce the undercount due to missed housing units, the Bureau invited communities to review and comment on preliminary housing unit counts and group quarters population counts.

The Bureau believed that through the Local Review Program, errors in the counts could be identified and resolved before a district office closed and its population and housing counts finalized. By involving communities, the Bureau hoped to gain the communities' awareness, knowledge, and acceptance of the counts.

About two-thirds of the communities within the urban areas reviewed challenged 2,459 census preliminary housing counts and 230 group quarters counts. In many cases, records were not kept that were required under Census Bureau guidelines to show the resolution of the challenges. It is difficult, therefore, to show the specific effectiveness of the Local Review Program. However, our discussions with a number of communities showed a lot of interest in the program, a generally positive opinion of the way it was conducted but some dissatisfaction.

AN OVERVIEW OF THE LOCAL REVIEW PROGRAM

Participating communities were provided, for review and comment, preliminary group quarters population counts, housing unit counts, and Census Bureau maps for areas enumerated. Preliminary population counts were also provided. Counts were provided for each enumeration district in the community's area. The Bureau required documentation from the communities to support a challenge. For contesting housing unit counts, the Bureau considered the following sources as acceptable support: building and demolition permits, utility connections, aerial photographs, field surveys, land use maps, address lists, and tax assessors' records. Also, the community had to respond at the enumeration district level or tract level. For contesting group quarters counts, communities were to provide a list of the contested group quarters and estimated population. This is the only instance when population estimates were accepted to support a challenge. In other words, a community could not merely express dissatisfaction with the

population count itself. The community had to support a problem with housing or group quarters counts for the specific enumeration district where the potential problem existed.

Local officials had 10 working days from the date of receipt of the listings to review and return their comments. If a challenge was not properly documented, community officials were given an opportunity to provide additional support. For adequately supported challenges, Census Bureau records were first checked to see if they could be resolved. In this respect, the preliminary population and housing counts were provided before all planned procedures for taking the census were completed. It was possible, therefore, for a community's concern to already have been resolved by ongoing procedures which might have changed the preliminary counts. However, if internal records checks could not resolve the community's challenge, areas in question were recanvassed as time and money permitted.

The Bureau budgeted $11 million for the Local Review Program. This budget provided for about 11 enumerators and 2 clerks per district office. According to the Bureau, these resources allowed for a recanvass of up to 20 percent of a community's housing units.

Communities were provided the preliminary counts as they became available which in some areas was June 1980. About 31,000 of the 39,500 communities appointed review liaisons to serve as contact points for the program, which was considered by the Bureau as a willingness to participate. As of October 13, 1980, 12,392 communities had responded, of which 5,829 had no complaints and 6,563 challenged housing and group quarters counts. Of 6,563 challenges, 4,020 were rejected because they failed to meet Census Bureau criteria for an acceptable response.

HOW THE PROGRAM WORKED IN 29 OFFICES

Records for the program were examined at 27 of our sample 40 district offices. At two more sample offices we were advised that all Local Review records had been lost. These two district offices were in San Francisco. The 29 offices were selected because they had completed Local Review at the time we finished our fieldwork. The following table shows the locations of the 29 sample offices.

Urban area	Number of district offices sampled
Chicago, IL	2
Cleveland, OH	3
Detroit, MI	2
Los Angeles County, CA	8
New York, NY	3
Philadelphia, PA	3
Pittsburgh, PA	2
San Francisco Bay area, CA	5
West New York, NJ	1
Total	29

The 27 offices reviewed covered 267 communities, of which 148 responded with 1 or more challenges and were accepted for review, 24 had their responses totally rejected because they did not meet Census Bureau documentation criteria, and 95 did not respond. In some cases, district offices not included in our sample shared responsibility for counting a community's population and responding to local officials' challenges. Therefore, our data should not be considered as a community's total response.

Caution should be exercised in considering the data we summarize on the program because district offices frequently did not keep records as required by Census Bureau instructions. Records on disposition of written community challenges were frequently incomplete or were not in the required form, which made determining the disposition difficult because of the reconstruction needed. Also, district office officials advised us that some responses had been received and handled over the telephone without preparing required forms.

Resolving housing count challenges

The following table shows, by urban area, the disposition of the housing unit count challenges for the 148 communities' responses accepted at 27 sample district offices.

Urban area	Enumeration districts with housing counts challenged	Disposition of challenges		
		Recanvassed	Other action	No action
Chicago, IL	384	129	144	111
Cleveland, OH				
City	325	107	33	185
Suburban area	187	52	117	18
Detroit, MI				
City	62	14	47	1
Suburban area	13	8	5	0
Los Angeles County, CA				
City	369	364	4	1
Suburban area	348	102	125	121
New York, NY	125	90	0	35
Philadelphia, PA	64	47	17	0
Pittsburgh, PA	71	42	3	26
San Francisco Bay area, CA				
City	99	0	99	0
Suburban area	327	223	77	27
West New York, NJ	85	85	0	0
Total	2,459	1,263	671	525

As the table above shows, 1,263 (51 percent) of the challenges were resolved through a recanvass of the area in question. Another 671 challenges (27 percent) were resolved by some other type of action, such as comparing information provided by the community with address registers or comparing differences between community estimates and census data resulting from rechecking the status of housing classified as vacant or nonexistent and other followup operations. The Bureau took no action on the questioned housing counts of 525 districts, although the challenges were apparently documented in accordance with Bureau requirements.

When the decision was made to take no action on the 525 districts with questionable housing counts, it was usually because the (1) district office had already spent its funds budgeted for recanvassing, (2) communities had not responded in the allowed time, or (3) community estimates were lower than preliminary census counts.

For example, in Cleveland, 185 challenges involving 2,065 housing units went unresolved. The bulk of the unresolved challenges, 163, were in 1 of 3 district offices reviewed. The city did not believe these challenges warranted resolution,

according to the district office manager of the office involved. The city's representative and the district office manager agreed that the Bureau did not need to recanvass for any challenged count when the city's estimate differed from the preliminary field count by less than 18 units. Given this criterion the district office still recanvassed 20 percent of the housing units in its area, according to the district office manager. The recanvassing found 85 missed units which were vacant. According to the district office manager, the city's representative said he was satisfied with the results and told the district office manager not to recanvass any more areas. The city's representative declined our request for comments on the city's satisfaction with the Local Review Program.

Also, in New York City, 35 enumeration district challenges involving an unrecorded amount of housing units were not resolved because the city had not responded in the allotted 10-day period. The city took 58 days to respond. In Pittsburgh, 26 challenges involving 1,706 housing units were ignored because the district office had spent its allotted budget. In Chicago and in suburban Los Angeles, 111 and 121 enumeration district challenges were not resolved because the community estimates were lower than updated Bureau counts. The housing in question was 2,709 units in Chicago and 3,046 units in suburban Los Angeles.

Changes to preliminary housing and population counts

Overall, Census Bureau actions for the 27 district offices resulted in the communities gaining at least 8,648 housing units and about 52,500 persons to their preliminary counts. The following table shows, by urban area, the reported changes to preliminary housing and population counts.

Urban area	Housing count change	Population change
Chicago, IL	- 164	13,680
Cleveland, OH		
City	751	Not reported
Suburban area	1,121	4,692
Detroit, MI		
City	14	44
Suburban area	10	40
Los Angeles County, CA		
City	3,154	2,744
Suburban area	934	9,791
New York, NY	-3,024	5,025
Philadelphia, PA	494	Not reported
Pittsburgh, PA	77	2,985
San Francisco Bay area, CA		
City	Did not respond	
Suburban area	5,213	11,917
West New York, NJ	66	1,587
Total	8,646	52,505

The data shown above reflects the best information available. However, the Bureau's failure to complete and keep precise records hampered our effort to obtain accurate information on the outcome of the Local Review Program. The Bureau's required diary of district office action for local review was often incomplete, lacked sufficient detail, and included changes to housing and population counts from operations other than the Local Review Program. Also, at least 25 of 27 district offices never completed the required supporting documents and records.

As the above table shows, an increase in population did not necessarily follow an increase in housing units. For example, the 2 Chicago district offices reviewed reported to the city of Chicago a decline in housing of 164 units but an addition of 13,680 people. Likewise, New York City saw a reported decline in housing by 3,024 units but an overall gain in population of 5,025 people. Specifically identifying why these seemingly inconsistent changes resulted was not possible because of the condition of records. The adjusted counts included all changes resulting from followup operations, coverage improvement operations, and local review resolutions.

Resolving group quarters challenges

Local officials challenged census group quarters counts in 230 enumeration districts. The following table shows by urban area, the number of districts with group quarters counts in question and how the challenges were resolved.

Urban area	Enumeration districts with group quarters counts challenged	Disposition of challenges			
		Reenumerated	Within 5-percent tolerance	Other action	No action
Chicago, IL	62	0	0	0	62
Cleveland, OH					
City	19	4	0	15	0
Suburban area	7	1	0	6	0
Detroit, MI					
City	29	25	0	3	1
Suburban area	1	0	0	1	0
Los Angeles County, CA					
City	None				
Suburban area	11	9	1	0	1
New York, NY	42	11	0	0	31
Philadelphia, PA	27	15	0	12	0
Pittsburgh, PA	8	2	5	1	0
San Francisco Bay area, CA					
City	Did not respond				
Suburban area	22	7	4	6	5
West New York, NJ	2	2	0	0	0
Total	230	76	10	44	100

As the table shows, for 100 enumeration districts (about 43 percent), the Bureau took no action on the questioned group quarters counts. The 31 challenges in New York City were not resolved because the city took 58 days to respond. The 62 challenges in Chicago went unresolved because the city submitted its response after the district office responsible for the areas in question had closed. The remaining five challenges were not resolved, according to the Bureau, because they involved units which did not meet the Bureau's definition of a group quarters.

Overall the Bureau reported that 7,957 persons had been added in our sample 27 district offices as a result of resolving group quarters challenges. The most persons were added in Philadelphia--4,650 persons. The majority of these additions,

3,700 persons, resulted from reenumerations of group quarters facilities. On the other hand 46 people were added in Detroit, the least of any area examined.

The reported adjustments to group quarters counts, like the reported adjusted figures for housing unit counts, include all changes to group quarters counts resulting from followup operations, coverage improvement operations, internal office checks, as well as the Local Review Program.

Rejected community responses

At the district offices reviewed, the Census Bureau rejected 24 communities' responses because they did not meet documentation requirements. The communities were in the suburban areas of Cleveland, Los Angeles, San Francisco, and West New York. Not providing housing unit estimates was the reason most frequently cited by the Bureau when responses were rejected. Of the 24 rejections, 10 were for providing population estimates rather than housing unit estimates. For remaining rejections

--seven communities had failed to provide the required supporting evidence,

--five communities had provided housing unit estimates for areas other than tracts or enumeration districts,

--three communities had challenged the vacancy rates, and

--one community's response was rejected because it appeared to cover a geographic area outside the district office's boundaries.

Of the seven communities which had failed to provide adequate support, one also provided housing data for other than tracts or enumeration districts and another also responded with population challenges rather than housing count challenges.

When an entire response was rejected, the census representative was supposed to contact the community and ascertain if it wanted to correct the problems. We contacted 3 of the 28 communities and found the Bureau had given each the opportunity to correct their responses. Two communities chose not to resubmit their responses because they basically agreed with the Bureau's preliminary counts. The third decided to revise its response. In making the revisions, the community checked its building department records and canvassed streets to check housing units. In the end it found that the Census Bureau

housing counts were found to be accurate, according to the community's mayor. We did not contact the other 25 communities.

Not all communities participated

Our telephone survey of 30 of the 95 communities which Bureau records classified as not responding showed the following:

--15 communities had agreed with Bureau preliminary housing and group quarters counts.

--11 communities said they had responded. For eight claims neither the communities nor a search of census files could produce any evidence supporting the community claims. For the other three communities, a search of census files did not produce their responses. The communities, however, gave us copies of their responses.

--4 communities said they had not received some or all of the materials related to the program. Two communities said they had received preliminary counts but had not received any guidelines as to what to do with the information. Two other communities said the Bureau had never sent preliminary count data to them but they had received program guidelines. A search of return receipts from the Postal Service verified that one of the two communities had indeed received its preliminary counts. The other had not.

The Census Bureau presumed that if a community did not respond, it did not question the preliminary counts. Our survey showed that this assumption is frequently not valid. However, it is reasonable to assume that if a community had a problem with the preliminary counts and did not hear from the Bureau it would have followed up to insure that the Bureau knew about its concerns.

Responding communities views

We contacted 35 communities covered within the 27 district offices sampled whose responses had been accepted by the Census Bureau to obtain their opinions of the Census Bureau's actions. Of the 35 communities, 21 were satisfied; 9 were dissatisfied; and 5 did not wish to comment, of which 3 are involved in legal actions against the Bureau.

The reasons most often cited for satisfaction with the program were (1) the helpfulness and cooperative spirit of Census Bureau employees (cited by eight communities) and (2) the fact that adjustments to preliminary counts brought the

counts more in line with community estimates (also cited by eight communities). Five communities satisfied with the Local Review Program did not provide any further comment.

Various problems were cited about the program with no one problem being dominant. The problems included the

--20 percent limitation on recanvassing,

--unwillingness to accept housing vacancy rate complaints,

--difficulty of working with data grouped by enumeration district and data quality, and

--Census Bureau unwillingness to match community name lists with census records.

CONCLUSIONS

The effectiveness of the Local Review Program in identifying housing unit and group quarters discrepancies in the preliminary counts cannot be determined because of the poor condition of records. The Census Bureau budgeted $11 million for this program but failed to monitor it to insure that required records were being kept. It will be difficult to evaluate whether the program significantly added to the accuracy of the census. Determining the results of the program is further complicated by the results of the major census procedures that remained to be performed when preliminary population and housing counts were provided to the communities. The reported changes to preliminary counts were a mixture of the results for all remaining followup procedures. The results of individual procedures, therefore, are difficult, if not practically impossible, to obtain.

On the brighter side, our limited survey of communities which responded or did not respond to the preliminary population and housing counts showed much local interest in the program. However, community satisfaction with the program appeared to be related to the degree of satisfaction communities had with census results in their areas. Although communities did cite problems with the program, they appeared to be satisfied with the concept of the program.

CHAPTER 5

FINAL POPULATION COUNTS ACCURATELY TABULATED

In general, the Census Bureau's final population counts for sampled enumeration districts accurately reflected the actual population counts obtained from households and reported by enumerators. In those few instances when final counts differed significantly from the counts prepared by district offices, they were only accepted after an attempt was made to resolve the differences.

OVERVIEW OF THE POPULATION COUNT PROCESS

The 1980 census data was processed and tabulated in three phases. First, district offices manually prepared preliminary population counts for each enumeration district canvassed in their geographic areas. Next, district offices sent the questionnaires to the data processing centers, where they were microfilmed and their information transmitted to computer data banks in Suitland, Maryland. At Suitland, the final population and housing counts were tabulated. The computer-prepared counts were matched with the preliminary field counts which were used for control purposes.

Control counts were used by the Census Bureau to insure that all questionnaires for an enumeration district were processed completely and accurately. Tolerance limits were established for accepting final population counts based on the control counts. If a significant difference was found, clerks at the data processing offices were directed to review the questionnaires and address registers to resolve the discrepancies. A difference for population counts was considered significant when the computer-prepared counts differed from the field counts by more than 1 percent plus eight persons. For example, if the preliminary field count showed a population of an enumeration district to be 1,000, then a computer-prepared population count of between 982 persons and 1,018 persons was acceptable.

Clerks were usually able to bring the computer counts in line with the field counts. When the discrepancies could not be resolved, the Census Bureau "goldplated" a count; that is, it accepted the computer's count.

Thirteen other checks were made with could have caused an enumeration district to not be accepted. These included checking for such things as discrepancies in housing and block counts. We did not assess the results of these other types of checks.

FINAL POPULATION COUNTS ACCURATE FOR SAMPLED AREAS

We ascertained the accuracy of population counts reported by the Census Bureau for 400 enumeration areas in 40 district offices. First, we verified that field counts reflected the population counts reported on questionnaires. This was done by comparing each questionnaire with tally sheets prepared by district offices. Next, we totaled the population counts for tally sheets and questionnaires to insure they agreed. We then used our verified counts as control counts to assess the accuracy of final population counts prepared by Bureau computers.

Counts prepared by district offices were accurate. Only 6 of the 395 field counts verified differed from population data on questionnaires by more than the amount allowed. We did not complete verification work on five sampled enumeration districts in New York. In the six enumeration districts with incorrect field counts, the discrepancies were caused by clerical errors in the posting and adding of population data from questionnaires.

Of the 395 enumeration districts sampled, 281 had been completely processed, 72 were still being processed, and 42 were awaiting processing as of November 13. A review of the 281 processed districts showed:

--278 accepted population counts were within allowed limits.

--3 population counts were accepted through goldplating.

For these latter three districts, data processing office clerks determined after reviewing the districts' records that the computer counts should be accepted even thought they differed significantly from the field counts. Two of the districts goldplated were ones we verified as having incorrect field counts caused by clerical errors. The Bureau had entered an incorrect field count into its data bank for the third district.

The following table summarizes, by urban area, the results of data processing operations for the 281 enumeration districts processed.

Urban area	Enumeration districts sampled	Enumeration districts		
		Accepted within tolerance	Gold-plated	Not yet processed
Chicago, IL	60	36	0	24
Cleveland, OH	30	29	1	0
Detroit, MI	40	39	1	0
Los Angeles County, CA	80	65	0	15
New York, NY	65	21	0	44
Newark, NJ	10	1	0	9
Philadelphia, PA	30	21	0	9
Pittsburgh, PA	20	15	0	5
San Francisco Bay area, CA	50	42	1	7
West New York, NJ	10	9	0	1
Total	395	278	3	114

CONCLUSION

Questionnaires for sampled enumeration districts were processed accurately, and the final accepted population counts are reliable.

CHAPTER 6

OBJECTIVE, SCOPE, AND METHODOLOGY

The objective of our examination, which was requested by the House Minority Leader and nine other members of Congress (see app. I), was to detect any widespread inappropriate altering or recording of 1980 census population counts. Our appproach focused on data collection, processing and tabulation functions performed by the Census Bureau's main organizational units responsible for taking the census--district offices, processing centers, and headquarters. In the broadest sense, district offices collected census questionnaires, and processing center machines read the questionnaires and automated the data for headquarters to tabulate by appropriate geographic location and other formats.

The scope of our work was sufficiently extensive to accomplish our objective at the locations reviewed. But our findings cannot be extended with statistical precision to the entire census. Further, in testing Bureau operations, two samples of questionnaires were drawn and the results of some individual operations were selectively examined. The test results are also not statistically projectable. Essentially, our examination was limited to a review of Bureau records in checking the accuracy or reasonableness of population counts. The ultimate test of accuracy would be confirmation by the household members who gave the population counts.

At the district office level, we selected 40 of the 409 offices to determine the

- --extent and propriety of changes made to population counts on questionnaires returned in the mail,
- --reasonableness of the population counts for questionnaires obtained by enumerators when respondents did not return questionnaires in the mail,
- --reasonableness of population counts obtained through coverage improvement programs, and
- --clerical accuracy and reliability of records used to produce district office population and housing counts.

Our fieldwork at the offices was carried out from Census Day (April 1) to the time the offices closed, which ranged from August to mid-November 1980.

The 40 district offices selected were in or near the urban areas of Chicago; Cleveland; Detroit; Los Angeles; New York City; Newark and West New York, New Jersey; Philadelphia; Pittsburgh; and San Francisco. These areas were selected with the assumption that they would provide a good test of census procedures as, historically, persons in urban/inner city areas have been more difficult to count. District offices within the urban areas were selected to include urban and inner city locations.

We randomly selected 12,000 questionnaires returned in the mail to check on changes made to the reported population counts. The questionnaires were drawn from a total of 400 enumeration districts. The population counts were obtained as the questionnaires were received at the 40 district offices selected and then compared with the population counts on the questionnaires after the district office staffs completed their reviews. In doing this check, we identified those questionnaires with incorrect responses to questionnaire population consistency check questions which required followup and could result in a change to the reported population. We did not review other checks on the completeness of reported population because the results cannot generally be verified from records alone.

As an additional check on changes to reported population counts, we randomly selected 4,000 questionnaires which all required telephone calls or personal visits to complete or determine the correct information. Hence there was greater opportunity to change population counts. All questionnaires selected had failed edit for various reasons. This sample, like the 12,000-questionnaire sample, was checked only for changes resulting from incorrect responses to questionnaire population consistency check questions.

To check the reasonableness of questionnaire population counts obtained by enumerators, we selected 400 enumeration districts and compared, for each district, the average household population for questionnaires returned in the mail with the average household population for questionnaires obtained by enumerators. We assumed that, on the average, there should be no significant difference between the average household sizes reported by respondents and enumerators because the geographical areas were identical. We used a generally accepted statistical test to determine significance in comparing the two averages. (See app. III.)

At each of the 40 district offices, we assessed the reasonableness of population counts obtained through programs (collectively called special places) for counting nonhousehold populations. These are persons staying at such places

as hospitals, military bases, hotels and bus depots. For each of the special place programs (group quarters, T-night, M-night, and casual count), we compared the population counts obtained with the Census Bureau's quality control limits on population to be counted.

For 29 of the 40 district offices, we reviewed records on the dispositions of local government officials' challenges to the Bureau's preliminary population and housing counts. The 29 offices had completed their Local Review Programs at the time of our fieldwork. Our examination was limited to reviewing community responses and the Census Bureau's dispositions, as shown in district office records. As time permitted, we contacted community appointed representatives for the program to determine their (1) opinions of the program, (2) reactions to the Bureau's handling of their challenges, and (3) in the case of nonresponding communities, reasons for not responding to the preliminary counts.

At the Bureau's three centers for processing 1980 census questionnaires, we reviewed and tested procedures for machine reading the population counts reported on questionnaires and accepting the final population counts. The questionnaires were processed on an enumeration district basis. The United States was divided into about 320,000 districts for census purposes. Fieldwork at the data processing centers was performed from May through mid-November 1980.

The Bureau set tolerances for accepting computer-prepared population and housing counts. The computer counts were compared with control counts prepared by district offices. If the tolerance was exceeded, the results were not accepted until the count was within tolerance. To test the operation of this process, we used a sample of 400 enumeration districts from our 40 sample district offices. For each of the 400 districts, we checked the accuracy of population counts prepared by district office personnel and compared these with final counts to determine if they were within the tolerances.

At Census Bureau headquarters, district offices and data processing centers, we interviewed officials concerning census procedures and reviewed manuals and other documents containing instructions for conducting the census.

Our work was coordinated with the Department of Commerce Inspector General's staff, and we reviewed their reports concerning the 1980 census.

APPENDIX I

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October 31, 1979

The Honorable Elmer B. Staats
Comptroller General
U.S. General Accounting Office
Washington, D. C. 20548

Dear Mr. Staats:

As you know, the Bureau of the Census is gearing up for its major undertaking -- the decennial census. It is our view that the General Accounting Office should begin at once to monitor the conduct of the census, and report periodically to Congress on the progress made and the manner in which the Census Bureau is implementing its legal duties.

We believe that the GAO should use its discretionary authority to identify and initiate evaluations of Federal administrative operations wherever independent non-partisan oversight appears to be in the public interest. The census has a profound political impact and directly affects countless government programs. It is imperative to protect the integrity of the census.

With this in mind, we wish you to examine our major concerns. First, the 1980 Census has particular significance because approximately $50 billion in Federal funding for localities will be allocated according to formulae based in whole or in part on the census results.

Second, the results of the census will have enormous implications for Congressional reapportionment and the composition of the Electoral College. Our concern is magnified by massive shifts in the American population since 1970.

Third, we are deeply concerned that all efforts are made to establish adequate procedures for counting those individuals in American society, such as poor and minority populations living in rural as well as urban settings -- populations which are extremely difficult to locate.

The census process is uniquely open to political abuse. While we have received assurances from professionals in the Census Bureau that safeguards against political manipulation will be applied, we remain concerned that last minute pressures could produce nefarious results.

APPENDIX I

The Honorable Elmer B. Staats
Page Two
October 31, 1979

We believe that the passage of the Civil Service Reform Act of 1978 imposes some of the needed discipline on census procedures; this law must be faithfully implemented.

We also believe that other laws and Constitutional provisions are in place which assure an objective, accurate count through limitations on partisanship in the hiring and review procedures, including, for example, 5 U.S.C. 3303 and Executive Order No. 10577. We are concerned, however, that these legal restrictions on census procedures are being ignored.

We also question the legality of Executive Orders and an Office of Personnel Management directive which attempt to completely exempt the census from civil service laws designed to assure non-partisan procedures in the hiring process for all agencies, including the Census Bureau.

We recognize that there are historical arguments for introducing partisan considerations into the census hiring process. We recognize also that a break with tradition is neither an easy nor a simple decision to make. We are concerned, however, that the initial political bias which has characterized important administrative decisions in census undertakings thus far may produce a political bias in the final results. We are mindful that procedures can sometimes influence statistical conclusions in both subtle and not so subtle ways. This underlies our concern for procedural decision-making, for both the hiring and the review processes. When the time comes for actual implementation of the census, resolution of disputes over the results will necessarily occur in a very short time frame, after which questionable results may be difficult to challenge.

Accordingly, as a matter of the highest priority, we urge you to exercise your full authority and to instruct the General Accounting Office to establish an ongoing monitoring program to assure that objective and adequate census procedures are adopted and implemented to protect the credibility of the census and, in the final analysis, to assure an accurate count.

We are particularly concerned that the procedures outlined by the Census Bureau will allow communities with extensive political influence to attempt to manipulate the results. Accordingly, development and implementation of procedures for investigating the possibility of an overcount would be of particular import to maintaining the accuracy of the count.

Clearly, if one segment or one area of the country is counted too generously, this will effectively disenfranchise all others, and will shortchange them in Federal programs where funds are allocated according to population.

The Honorable Elmer B. Staats
Page Three
October 31, 1979

Details on some of our concerns are outlined in a recent letter by Congressman Leach to the Director of the Census Bureau, Vincent Barabba. Also enclosed for your careful consideration are CRS analyses, independent articles, statements and correspondence on the issue.

We cannot overemphasize our concerns on this issue. It appears to us that it is of paramount importance to maintain neutral Congressional oversight of census activities and that the General Accounting Office is in a unique position to provide this oversight through a review of census procedures and timely reports to Congress and the public at appropriate stages in the process.

We look forward to your reply.

Sincerely,

John J. Rhodes, M.C.
Minority Leader

Robert H. Michel, M.C.
Minority Whip

Samuel L. Devine, M.C.

E. G. (Bud) Shuster, M.C.

Clair W. Burgener, M.C.

Jack Edwards, M.C.

Trent Lott, M.C.

Guy Vander Jagt, M.C.

James H. Quillen, M.C.

Jim Leach, M.C.

Enclosures

APPENDIX II

NINETY-SIXTH CONGRESS

ROBERT GARCIA, N.Y., CHAIRMAN

GEORGE THOMAS (MICKEY) LELAND, TEX.
GERALDINE A. FERRARO, N.Y.
SUE TAYRON, PA.
MARY ROSE OAKAR, OHIO

JAMES A. COURTER, N.J.
CHARLES PASHAYAN, JR., CALIF.
DANIEL B. CRANE, ILL.

U.S. House of Representatives
COMMITTEE ON POST OFFICE AND CIVIL SERVICE
SUBCOMMITTEE ON CENSUS AND POPULATION
601 HOUSE OFFICE BUILDING ANNEX 1
Washington, D.C. 20515

May 6, 1980

Honorable Elmer B. Staats
Comptroller General
General Accounting Office
441 G Street N.W.
Washington, D.C. 20548

Dear Mr. Staats:

It is my understanding that the Republican Leadership in the House of Representatives has requested a thorough study by the General Accounting Office of the procedures utilized in the 1980 census and their implementation.

The Subcommittee on Census and Population of the House Committee on Post Office and Civil Service clearly has an interest in the substance of this report. As Chairman of this subcommittee, I would like to formally request that a report on this matter also be addressed to this subcommittee.

I appreciate your cooperation in this matter.

Sincerely,

Robert Garcia

Robert Garcia
Chairman

RG:MF:tk

METHOD USED TO TEST REASONABLENESS OF ENUMERATOR-OBTAINED POPULATION COUNTS

Using the average population per questionnaire obtained by the mail-in method and the enumeration method, we tested at the enumeration district level to see if there was a significant difference between the two average counts. Our test covered 10 enumeration districts in each of 40 district offices. The technique we used in making this test or comparison at the 90 percent confidence level was the comparison of means test (usually called the t-test).

This test measures the probability that differences in the two averages of the two groups can be attributable to sampling. For example, the average population count for 10 sampled enumeration districts at 1 district office showed the average household size reported by mail was 2.75 and the average household size reported by enumerators was 1.84. When tested, the significance of difference between the two averages was 4 percent. We believe that when the difference is 5 percent or less, there is a high probability that the difference was not due to sampling error alone. The following table shows the results of our test for the district office discussed above.

Category	Population	Questionnaires	Average
Enumerated	1,442	783	1.842
Mail	7,546	2,932	2.574

t-value = -2.382774279

Probability level that the difference is due to sampling--0.04104

We used the following criteria to determine significant differences:

--Less than 0.05--highly significant.
--0.10-0.05--significant.
--Greater than 0.10--not significant.

The following table shows the results of the comparison means test for all 40 district offices.

District office	t-value	Probability level	Significant
Chicago:			
2502	-0.016410548	0.9872650	no
2540	0.901088470	0.3910166	no
2542	-0.245634522	0.8114751	no
2544	-0.904362781	0.3893692	no
2547	-0.433058675	0.6751653	no
2548	1.006744575	0.3403561	no
Cleveland:			
2415	-0.098214158	0.9239149	no
2416	-0.448419088	0.6625552	no
2444	0.617847171	0.5504868	no
Detroit:			
2401	-0.205401071	0.8418295	no
2402	0.035457442	0.9724890	no
2440	-2.120143085	0.0630230	sigf.
2442	-0.359467656	0.7267201	no
Los Angeles:			
3201	1.036374925	0.3270696	no
3202	0.681569972	0.9471509	no
3207	0.601841787	0.5621320	no
3208	0.293344056	0.7759109	no
3240	-0.252949522	0.8059901	no
3242	1.501183575	0.1675500	no
3243	1.058191907	0.3175423	no
3244	-0.000041171	0.9999681	no
Philadelphia:			
2342	-0.206747091	0.8420927	no
2343	-0.153618866	0.8812996	no
2344	-0.220701986	0.8308530	no
Pittsburgh:			
2309	-1.691097498	0.1250755	no
2345	-2.937095346	0.0165648	high

New York:

2201	-0.866846487	0.4085420	no
2240	-0.544620518	0.5992473	no
2241	-1.185167719	0.2663006	no
2245	-0.458233571	0.6576481	no
2248	-1.701681489	0.1230238	no
2254	-0.490828639	0.6352931	no
2256	-0.782433857	0.4540529	no

Newark:

2258	-1.472311675	0.1750230	no

San Francisco:

3222	-0.434311209	0.6732840	no
3223	-0.594120283	0.5670637	no
3225	-0.114214275	0.9113286	no
3245	-0.477259860	0.6445535	no
3248	-2.382774279	0.0410407	high

West New York:

2259	-0.285034838	0.7820680	no

APPENDIX IV

UNITED STATES DEPARTMENT OF COMMERCE
Bureau of the Census
Washington, D.C. 20233

OFFICE OF THE DIRECTOR

DEC 1 1 1980

Honorable Elmer B. Staats
Comptroller General of the United States
General Accounting Office
Washington, D.C. 20548

Dear Mr. Staats:

We greatly appreciate your making available to us a preliminary copy of the study made by members of your staff dealing with the identification of a possible overcount in the 1980 Decennial Census. Discussions between our staffs brought to light certain factual problems for which we agreed to supply documentation. The enclosed documents address the following issues:

1. Average enumeration district (ED) size.
2. Estimated cost of the census.
3. Estimated cost of local review.
4. Mail return rates.

In my view this study is an example of the best in interagency cooperation. Although initially we believed that it would not be possible for outside technicians to do an effective job in analyzing activities at our district offices, we found that they were able to do a very effective job. In the future, it is probable that a similar type operation would be used by the Census Bureau to monitor a sample of district offices by representatives from our own headquarters staff.

We believe your staff did an outstanding job under very trying conditions, and showed exceptional sensitivity in their contacts with our field offices.

Sincerely,

VINCENT P. BARABBA
Director
Bureau of the Census

Enclosures

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* U.S. GOVERNMENT PRINTING OFFICE : 1981 - 341-044/512